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May 22, 2020

VIA ECFS **EX PARTE**

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW, Room TW-A325
Washington, DC 20554

Re: Docket WT 19-250, RM-11849
FCC-CIRC2006-03

Dear Ms. Dortch:

I am a retired FCC senior executive whose career focused on spectrum policy.[1] I have commented several times previously on infrastructure issues. I unambiguously support the draft *Declaratory Ruling & NPRM.* However I also wish to point out to the Commission and industry that in the long term 5G infrastructure will continue to have conflicts with its neighbors unless the carriers and the infrastructure industry stop pursuing mainly legal solutions to conflicts over ubiquitous 5G infrastructure with local governments and start recognizing that new industry frameworks are needed due to the changing nature of infrastructure.

I came to FCC when Charles Ferris was Chairman and he often quoted his mentor Thomas "Tip" O'Neill. Speaker O'Neill is best known for the dictum "**All politics is local"**. Alienating neighbor of infrastructure through insensitive and inappropriate designs runs the real risk of increasing grass roots opposition to infrastructure that will impact political support -- if Speaker O'Neill is still correct.

I fully support the need for a rapid buildout of 5G infrastructure to facilitate the economic benefits of 5G to the whole economy and to society. 5G infrastructure is fundamentally different than previous generations of wireless infrastructure in two key ways:

1) It will mostly be much lower in antenna height than previous generations in order to get much higher spectrum reuse and thus higher capacity and speed and lower latency – key goals of 5G. Base stations over 50' will become

[1] FCC Press Release "FCC Engineer Michael J. Marcus Honored by Institute of Electrical and Electronics Engineers (IEEE)" February 3, 2004, (http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-243463A1.pdf)

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rare and limited to low population density areas and small base stations on utility poles and modest height buildings will become much more common especially in residential areas. Low infrastructure is much closer to eye level to construction details that are not annoying at the top of a 50'become much more distracting 15' above the ground,

2) It will be truly ubiquitous as can be seen the number of small base stations needed being often given as 700,000. Many Americans who can not see a base station in their neighborhood today will have one on their block or the adjacent block.

When I joined FCC in 1979 any radio antenna was a rare site in the urban and suburban landscape. There were a few broadcast antennas and some taxi companies, public safety agencies and utilities had Part 90 antenna systems, but these weren't very common or noticeable. The subsequent growth of commercial wireless has changed that and brought many benefits to society as well as economic growth. But the visual impact of these can be a real problem unless the industry makes some basic changes in its culture and organization for building and maintain infrastructure. Many of these issues are discussed in my previous filing in Dockets 17-79 and 17-84 which is attached to this filing.

While the actions and proposals in the *Declaratory Ruling & NPRM* will have short term benefits, the basic scheme of trying to regulate the appearance of infrastructure through either federal or local regulations is doomed to failure. **The industry needs the support of the very people in whose neighborhoods they are placing infrastructure in very visible places and industry cannot keep that support if they build needlessly messy infrastructure on a recurring basis, even if much of the infrastructure is neat.** Rather than spending large sums on lawyers and lobbyists the industry should look at itself in the mirror and realize that **consistent neat infrastructure** that **really** "looks like pizza boxes" is necessary and vital to their long-term success. They should implement a new clear industry culture that consistent neatness in visual appearance is key to industry success – not just something done in desperation to get construction approval.

Today's infrastructure often has collocated carriers and in such cases it is not clear if **any** single party responsible for the overall appearance of the infrastructure both as initially built and as its appearance evolves with maintenance and updates. This probably explain why I have repeatedly seen collocated systems with antennas that have different colors, such as the system shown at right. The red antenna clearly matches the brick background, but why are there white antennas? I suspect this color mismatch is due to maintenance and upgrades! Do today's carriers even have a single person with oversight of their "fleet" of base stations?

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In the long term, I urge the Commission to look at the "Safety Culture" policy[2] of its federal regulatory sibling, the US Nuclear Regulatory Commission. In both nuclear safety regulation and spectrum policy regulation there are many issues that can be regulated with explicit regulations. These are often issues subject to quantitative standards like public exposure of ionizing radiation from nuclear power plants and transmitter power and bandwidth limits. But a review of the details of the *Declaratory Ruling & NPRM* show the Commission is going down a slippery slope trying to regulate issues that are difficult or impossible to regulate in order to solve today's real problem of local government concern about the appearance of infrastructure.

The NRC Safety Culture Policy Statement[3] addresses issues that are hard to quantify and regulate directly but which are still important in the public interest because they prevent accidents. Below is a key section of NRC statement.

> The following are traits of a positive safety culture: (1) Leadership Safety Values and Actions—Leaders demonstrate a commitment to safety in their decisions and behaviors; (2) Problem Identification and Resolution—Issues potentially impacting safety are promptly identified, fully evaluated, and promptly addressed and corrected commensurate with their significance; (3) Personal Accountability—All individuals take personal responsibility for safety; (4) Work Processes—The process of planning and controlling work activities is implemented so that safety is maintained; (5) Continuous Learning— Opportunities to learn about ways to ensure safety are sought out and implemented; (6) Environment for Raising Concerns—A safety conscious work environment is maintained where personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment, or discrimination; (7) Effective Safety Communication— Communications maintain a focus on safety; (8) Respectful Work Environment— Trust and respect permeate the organization; and (9) Questioning Attitude—Individuals avoid complacency and continuously challenge existing conditions and activities in order to identify discrepancies that might result in error or inappropriate action.

Substitute "aesthetics" and "neatness" for "safety" and FCC may have a first draft of a parallel statement it could make. President Trump has repeated talked about the importance of aesthetics for the Mexican Border Wall.[4] **Are not aesthetics for ubiquitous 5G infrastructure in neighborhoods from coast to coast also important?**

I also urge Commission leaders in their public interactions with the wireless industry to state clearly and repeatedly that consistently neat infrastructure is a vital goal – not just the minimal design needed to get site owner or local government approval. The industry has been able to get legislation passes in more than 26 states to "simplify"

[2] https://www.nrc.gov/about-nrc/safety-culture/sc-policy-statement.html
[3] https://www.govinfo.gov/content/pkg/FR-2011-06-14/pdf/2011-14656.pdf
[4] https://www.google.com/search?client=firefox-b-1-d&q=trump+%22border+wall%22+aesthetics

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local government review – no doubt at a large cost in lobbying expenditures! **This legislation will not stay in place if a significant fraction of the US public has needless eyesores in their neighborhood.**

While industry brags about "pizza box" antennas, a review of their public relation material shows they consistently use only pictures of antennas on hollow metal poles. There is good reason to believe that a significant fraction of small base station will be on existing wooden utility poles that are common in much of the country. Neatness on such poles is possible but requires a different approach for hollow metal poles since cabling and equipment cannot be hidden inside such poles. While the industry is able to issue its "Best Practices" for local governments to manage infrastructure siting[5], why doesn't it have anything resembling "Best Practices" for ubiquitous small base stations? Why doesn't it have best practices for mounting equipment on wooden poles?

Many of us of a certain age remember the San Francisco store Gump's.[6] Its motto was "Good taste costs no more". The Commission should ask the 5G industry, does consistently neat base station design really cost more?

In the attachment are two recent photos of a small base station in the Seattle area that has existed in the current state for more than 5 years. Note that while the actual antenna at the top is a cylinder that is as attractive as a "pizza box", **the rat's nest of cables on the pole defies explanation or any sign of a rational design process.**

This Seattle installation is a sign of a broken design culture in the wireless industry that will not be resolved solely by the provisions of this draft *Declaratory Ruling & NPRM.* Regulation is not the answer. An industry cultural change is needed and FCC can press for it without complex and burdensome new regulations! A "Vast Wasteland speech"[7] at an industry convention is not needed, but clear statements are.

Sincerely,

/S/

Michael J. Marcus, Sc.D., F-IEEE
Director

[5] CTIA, New Best Practices Help Localities Manage Wireless Infrastructure Siting During COVID-19, April 14, 2020, https://www.ctia.org/news/blog-best-practices-help-localities-manage-wireless-infrastructure-siting-during-covid-19
[6] https://en.wikipedia.org/wiki/Gump%27s
[7] https://time.com/4315217/newton-minow-vast-wasteland-1961-speech/

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Recent Photos of a Seattle Area Small Base Station

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July 17, 2018

VIA ECFS **EX PARTE**

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW, Room TW-A325
Washington, DC 20554

Re: Dockets 17-79 and 17-84

Dear Ms. Dortch:

On July 12, 2018 the Commission released for public comment a draft Third Report & Order and Declaratory Ruling ("Draft") in the above proceedings.[8] This *ex parte* filing is in response to that request for comments. Marcus Spectrum Solutions, LLC ("MSS") has been an active participant in this proceeding with both written filings and meetings with staff. MSS fully supports the goal of rapid implementation of 5G with both timely FCC spectrum regulations and minimizing barriers to infrastructure rollout. Since most increases of capacity in the cellular industry has come from new infrastructure with closer spacing which enables frequency reuse, not new spectrum or new technology, it is critical that this infrastructure get built in a timely and cost effective way. Our filings have differed from the industry proponents only in pointing out that this can be done and should be done without creating massive ugliness in neighborhoods throughout America.

While 5G will generally result in lower base station heights throughout populated areas and traffic corridors with high densities of traffic it will also result in a high density of "small base stations" with heights of 7- 15m. It is unclear how many, but the total number of new base stations required has been estimated by industry initially as 400,000 and more recently as 800,000.

While industry correctly point out that these will not be as massive structures as the full size base stations which have been dominant in the past, they also pose new visual design challenges for two reasons:

1) The electronics packages on the small base stations will be near eye level

[8] https://docs.fcc.gov/public/attachments/DOC-352544A1.pdf

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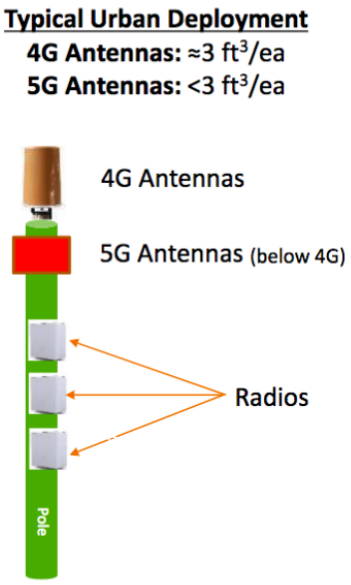
2) The antenna(s) at or near the top of the structure must be connected by cables to the electronics packages.



These points are shown in the diagram at left submitted into the record by AT&T.[9] Today's small base station antennas are generally designed with aesthetics in mind and are reasonable attractive - unlike the massive arrays of antennas with disparate designs on traditional full size base stations. However there are electronics packages, here labeled "radios", that must also be mounted. More importantly these must be interconnected.

If the Commission reviews photographs or sketches of small base station designs submitted in this proceeding and in numerous tweets by cellular industry participants, it is clear that essentially all of the small base station depicted are new construction on hollow metal poles and in many cases the electronics packages/"radios" are not even visible because they are mounted inside the hollow metal pole yielding a quite attractive installation. These are also the types of installations that industry invites FCC commissioners and senior staffers to for "photo ops". Examples from filings in Docket 17-79 are shown below:

[9] AT&T *ex parte* filing, February 23, 2018, Docket 17-79 (https://ecfsapi.fcc.gov/file/1022359695070/2018-02-23%20-%20ATT%20Ex%20Parte%20-%20WT%2017-79.pdf)

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By contrast, we have identified many existing small base stations that can only be described as needlessly messy and incompatible with their surroundings. We have included some of these in previous flings in this proceeding and in our own tweets. Below are samples of small base station implementations very much unlike designs that have appeared in industry filings:

Upon further consideration and discussion with industry insiders it became clear that one major different between these two sets of photos is not just the ugliness of the second set, but that the second set all involve mounting small base stations on existing

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wooden utility poles. A review of industry filings shows virtually no examples of wooden utility poles and the only one that we found was taken at such a distance that the design of the cabling is not apparent.[10]

The draft agenda item at issue here deals with OTMR

> "a new pole attachment process that new attachers can elect that places them in control of the surveys, notices, and make-ready work necessary to attach their equipment to utility poles."[11]

MSS fully supports this new procedure and its prompt implementation.

However, we urge the Commission and the commissioners to take this opportunity to explicitly tell the industry that their current practices of sloppy construction on existing utility poles, particularly wooden poles where internal mounting and cable routing is not feasible, risks the real possibility of a public backlash. Former FCC Chairman Charles Ferris was a protege of former House Speaker Thomas P. "Tip" O'Neill. Those of us who worked under Chairman Ferris recall well O'Neill's truism , **"All politics is local"**. The construction of massive numbers of messy small base stations on existing utility poles on our country's streets has a high likelihood of a grass roots backlash in both parties against high handed practices by the cellular industry which could actually hurt the 5G rollout.

Regulation is not the answer. Regulating aesthetics in governmental actions is most likely not effective. But the messy small base stations shown above were built in an era when local governments had some design oversight. It is clear that new legislation adopted in a number of states have removed all local design oversight if volumetric limits are met. While this legislation is explained by industry as necessary to speed approvals and limit excessive fees charges by local governments, industry has been quiet about the provisions that remove all local design oversight. For example consider Arizona House Bill 2365 enacted by the Legislature in 2017.[12] While this bill has the usual provisions to facilitate access to poles and limit fees, Sections 9-592(I,J) have the following provisions:

[10] *ibid.* at pdf p. 8
[11] Draft at para. 16
[12] https://www.azleg.gov/legtext/53leg/1R/laws/0124.pdf

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I. SUBJECT TO SUBSECTION K, PARAGRAPH 2, SUBDIVISION (c) OF THIS SECTION, A NEW, REPLACEMENT OR MODIFIED UTILITY POLE THAT IS ASSOCIATED WITH THE COLLOCATION OF SMALL WIRELESS FACILITIES AND THAT IS INSTALLED IN THE RIGHT-OF-WAY IS NOT SUBJECT TO ZONING REVIEW AND APPROVAL UNDER SECTION 9-594 IF THE UTILITY POLE DOES NOT EXCEED THE GREATER OF EITHER:

1. TEN FEET IN HEIGHT ABOVE THE TALLEST EXISTING UTILITY POLE, OTHER THAN A UTILITY POLE SUPPORTING ONLY WIRELESS FACILITIES, THAT IS IN PLACE ON THE EFFECTIVE DATE OF THIS SECTION, THAT IS LOCATED WITHIN FIVE HUNDRED FEET OF THE NEW, REPLACEMENT OR MODIFIED UTILITY POLE AND THAT IS IN THE SAME RIGHT-OF-WAY WITHIN THE JURISDICTIONAL BOUNDARY OF THE AUTHORITY, BUT NOT MORE THAN FIFTY FEET ABOVE GROUND LEVEL.

2. FORTY FEET ABOVE GROUND LEVEL.

J. NEW SMALL WIRELESS FACILITIES COLLOCATED ON A UTILITY POLE OR WIRELESS SUPPORT STRUCTURE IN THE RIGHT-OF-WAY ARE NOT SUBJECT TO ZONING REVIEW AND APPROVAL IF THEY DO NOT EXTEND MORE THAN TEN FEET ABOVE THE UTILITY POLE OR WIRELESS SUPPORT STRUCTURE AND DO NOT EXCEED FIFTY FEET ABOVE GROUND LEVEL.

These are volumetric exclusions from all local government oversight. There is now no local oversight in Arizona for construction no more than 10' above a pole and less than 50' off the ground. We have reason to believe that many of the other bills passed by state legislatures after industry lobbying have similar volumetric restrictions on local oversight.

Pragmatically, will such removal of local oversight help or hurt the likelihood that utility pole based small bae stations are reasonably designed for their locations? Our solution is not regulation, rather pressure from the Commission and commissioners to remind industry of the pragmatic importance of making reasonable design decisions and maintaining quality control over the actual construction of small base stations. Usually this construction is done by carriers' contractors and subcontractors with the focus on cost control and speed. Is there any consistent carrier review of the final product for compatibility with its environment?

For example consider this small base station with a "rat's nest" of wires a few meters away from a "Scenic Byway" sign on MacArthur Blvd. in Potomac Md. Note also the several colors used for the boxes containing the electronics packages used. If this is what industry builds with local government oversight, are they set to do a better job when the oversight is totally eliminated?

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We ask that the commissioners consider two actions - neither of which are regulatory:

1) Amend the concluding sections of the draft to make clear that the new freedom given carriers should be used responsibly and that carriers that continue to build large numbers of small base stations that are not visually compatible with their locations face a real risk of a backlash from the neighbors of such base stations and a rollback of the deregulation they have sought at the state and federal level.

2) Commissioners in their meetings with industry representatives and in their speeches at industry events should remind that the industry has been a great beneficiary of FCC actions that have changed long standing spectrum policies to their benefit and which have been implemented at speeds that have been difficult to achieve given the present resources available at FCC**. But to those to whom much is given, much is expected.** The industry should no squander this opportunity through massive messy construction on existing utility poles. It needs a coherent design process for building small base stations on existing poles and a real quality control process for the end product. The following set

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of principles comes from Crown Castle, a major contractor for infrastructure, in a Docket 17-79 filing[13]:

Discreet, innovative technology

We provide shared infrastructure that gives you the wireless service you've come to depend on—all while blending in with your environment.

Community Outreach

Our community outreach team develops community-friendly solutions and proactively meets with residents to make sure their concerns are heard.

Collaboration

We involve residents and municipal partners in every major decision so everyone has a say in the solutions that are deployed.

Should the industry as a whole have a comparable set of principles as it implements the vital 5G rollout? While a "Vast Wasteland" speech is not yet needed here, supportive feedback from commissioners and senior WTB staffers should tell industry they have a problem here and should work to solve it before it blows up in their faces.

We support the timely implementation of 5G and the general provisions of the draft 3rd R&O. Regulations are not the answer to the problems of visual design, but industry attention is.

The occasion of the adoption of this draft will be a key opportunity for FCC leadership to make clear to the cellular industry that they must act responsibly in rolling out vast numbers of small base station across the US and that adding small base stations to utility poles -- particularly wooden poles -- the subject of the OTMR action in this draft, has been a major design problem area in the past that must be corrected by the industry in a timely way.

[13] Crown Castle *ex parte* filing, November 10, 2017, Docket 17-79 (https://ecfsapi.fcc.gov/file/1110226657475/2017-11-10%20Crown_Castle_Ex_Parte_-_Peraertz.pdf)

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Sincerely,

/s/

Michael J. Marcus, Sc.D., F-IEEE
Director

cc: Michael Carowitz, Erin McGrath, Will Adams, Umair Javed
Aaron Goldschmidt, David Sieradzki, and Erica Rosenberg